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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/728,038

12/01/2000

Hung Chen

AMAT/3778/CMP/CMP/RKK

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APPLIED MATERIALS, INC.

P. O. BOX 450A

SANTA CLARA, CA 95052

EXAMINER

GRANT, ALVIN J

ART UNIT

PAPER NUMBER

3723

MAIL DATE

DELIVERY MODE

06/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/728,038	Applicant(s) CHEN ET AL.	
	Examiner ALVIN J. GRANT	Art Unit 3723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-13,15,16,19-33 and 37-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-13,15,16,19-33 and 37-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 28-31** are rejected under 35 U.S.C. 102(e) as being anticipated by Beardsley 6,299,515 in view of Kobyashi 6,489,573.

Beardsley et al. discloses a rotatable platen for a polishing system, comprising a patterned pad mounting surface forming a plurality of non-intersecting fluid retaining grooves each having a portion oriented at an angle relative to a radial line originating at a center of the pad. Beardsley et al. does not specifically disclose the groove sloping so that the groove depth changes along a length of at least one non-intersecting fluid retaining groove. Kobyashi et al. discloses a CMP polishing apparatus in which grooves are sloped so that the depth changes along the length so as to further control the direction of flow of the fluid contained therein. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the platen of Beardsley et al.'s apparatus to have the depth change along the length so as to further control the direction of flow of the fluid contained therein.

3. **Claims 1, 2, 4-7, 9-13, 15, 16, 19, 20, 26, 27, 32, 33 and 37-41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rubino et al 5,527,215 in view of Kobyashi et al.

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Rubino et al. discloses a semiconductor polishing device having the claimed features, except that Rubino et al. does not explicitly state that the depth of the groove changes along the its length. Rubino et al. does not specifically disclose the grooves having varying slopes. Kobayashi et al. discloses a polishing pad having sloping grooves so as to enhance the flow of the polishing fluid. It would have been obvious to one having ordinary skills in the art at the time the invention was made to have made the pad of Rubino et al. to have sloped grooves as taught by Kobayashi et al. so as to enhance the flow of the fluid.

4. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rubino et al. in view of Beardsley et al. as modified.

Rubino et al. is described above. Rubino et al. does not disclose a platen containing non-intersecting fluid retaining grooves. Beardsley et al. discloses a CMP apparatus comprising a rotating platen that contains recesses that distribute the slurry, which provides for a uniformly planarized workpiece and also creates a system which also removes slurry for disposal or reuse. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the platen of the Rubino et al.'s apparatus to include grooves as taught by Beardsley et al. so as to distribute the slurry along prescribed paths assuring more even distribution of the slurry and creating a system for removing the slurry for reuse or disposal.

5. Claims 21, 22, 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beardsley et al. in view of Okamura et al. 6,332,830 B1.

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Beardsley et al. as modified is described above. Beardsley et al. does not disclose a polishing pad with linear grooves. Okamura et al discloses an apparatus for chemical mechanical polishing using polishing pads containing linear grooves to provide for a more even distribution of pressure on the workpiece thus producing a better quality finish. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the platen of Beardsley et al. to include linear grooves as taught by Okamura et al. so as to allow for distribution of the slurry and the pressure transmitted to the workpiece.

Response to Arguments

6. Applicant's arguments filed 4/30/08 have been fully considered but they are not persuasive.

- Applicant's arguments that Osterheld et al. (US Patent No. 5,921,855) does not teach, show, suggest, or otherwise grooves which are sloped, are moot in view of new grounds for rejection.
- Applicant's arguments that Rubino et al. (US Patent No. 5,527,215) in combination with Osterheld et al. does not teach, show, suggest, or otherwise make obvious a substrate polishing pad, comprising: (a) a polishing surface on a first side of the substrate polishing pad; and (b) a mounting surface on a second side of the substrate polishing pad, wherein at least one of the polishing surface and the mounting surface has a plurality of non-intersecting fluid retaining grooves formed therein are moot in view of new grounds for rejection.

- Applicant's arguments that the combination of Rubino, et al. with Osterheld et al. does not teach, show, suggest, or otherwise make obvious a substrate polishing pad, comprising: (a) a polishing surface on a first side of the substrate polishing pad; and (b) a mounting surface on a second side of the substrate polishing pad, wherein at least one of the polishing surface and the mounting surface has a plurality of non-intersecting fluid retaining grooves formed therein, wherein the grooves are disposed so that upon a given direction of movement of the substrate polishing pad a fluid disposed in the grooves is urged to flow from an outer portion toward a center portion of the substrate polishing pad, and wherein the grooves are formed on the mounting surface and the substrate polishing pad comprises perforations extending between the polishing surface and the mounting surface, and wherein a depth of at least one of the non-intersecting fluid retaining grooves changes along a length of the at least one non-intersecting fluid retaining groove are moot in view of new grounds for rejection. (See above).
- Applicant's arguments that Beardsley et al. (US patent No. 6,299,515) does not teach, show, suggest, or otherwise make obvious grooves which are tapered or sloped with an indication angle along the length of the groove are moot in view of new grounds for rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALVIN J. GRANT whose telephone number is (571)272-4484. The examiner can normally be reached on Mon-Fri 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J. Hail can be reached on (571) 272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alvin J Grant/
Examiner, Art Unit 3723